

USSR

UDC 533.6.013.42

KUKHDA, K. Ya., KRAVCHENKO, V. P.

"Determining the Natural Vibration Frequencies of a Beam of Variable Cross Section With Concentrated Loads in a Liquid by a Numerical Method"

V sb. Dinamika gidrotekhn. sooruzh. (Dynamics of Hydraulic Engineering Equipment -- Collection of Works), Moscow, 1972, pp 140-142 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V403)

Translation: The natural frequencies of bending vibrations of a cantilever of rectangular cross section of constant width, the length of which considerably exceeds the width, are determined. It is assumed that there are concentrated masses at several points. The beam vibrates in an ideal incompressible liquid and the effect of the liquid is taken into account by coefficients of connected masses. Coupling conditions are described at points where there are concentrated masses. The solution is sought in the form of an expansion in terms of the natural forms of the vibrations. Ye. A. Vol'mir.

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USSR

UDC: 621.375.82

BUGAYEV, V. A. and KUKHTA, A. V.

"Correlation Between Oscillation Power and the Composition of the Discharge Products in a Water Vapor Laser"

Moscow, V sb. Kvant. elektronika (Quantum Electronics--collection of works) "Sov. radio," No 5, 1972, pp 111-114, 136 (from RZh--Fizika, No 4, 1973, Abstract No 4D1263)

Translation: In an experiment with an injection gas-discharge laser using water vapor a simultaneous oscillation power maximum at the  $\lambda = 27.9 \mu$  line and a maximum content of molecular hydrogen and oxygen were observed at the outlet of the discharge tube, formed by the decomposition of the water vapor. The oscillations with only water vapor admitted occurred to the degree of more than 70% of its decomposition at the outlet. The effect of the additive thus formed on the oscillation power is discussed. Bibliography of 10. Authors' abstract

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USSR

UDC 621.578.25

EUGAYEV, V.A., KUKHTA, A.V.

"Concerning The Correlation Between The Power Of Generation And The Composition Of Discharge Products Of A Water Vapor Laser"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 5(11), 1978, pp 111-114

Abstract: The results are presented of a quantitative evaluation of the composition of the discharge products in the water vapor of a flowing H<sub>2</sub>O laser. The connection between the power of generation and the quantity of dissociation products is also discussed. The evaluation is based on the known fact of the increase of pressure in a discharge tube following inclusion of a discharge with a given expenditure of working substance. Calculations were made with the use of Poiseuille and Knudsen equations, taking into account the parameters of the vacuum system and the characteristics of the passing mixture of gases. During experiments conducted on a small-sized gas-discharge flowing H<sub>2</sub>O laser, a maximum power of generation on the intensive line with  $\lambda = 27.9$  micron and a maximum content of molecular hydrogen and oxygen at the output of a discharge tube were simultaneously observed. Products were formed there because of decomposition of water vapor. During admission of water vapors only, generation took place with a decomposition grade at the output of more than 70 percent. The effect of a forced admixture and the discharge current on the power of generation

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USSR

BUGAYEV, V. A., KUGNETA, A. V., Kvantovaya elektronika, No 5(11), 1978,  
pp 111-114

is considered. The authors thank A. Ye. Basharinov for discussion of the re-  
sults obtained. 3 fig. 10 ref. Received by editors, 19 Nov 1971.

2/2

- 65 -

USSR

UDC 547.824+547.26.118

KUKHTA, E. P., FOROSTYAN, YU. N., Zaporozh'e Branch of the  
Donetsk Institute of Soviet Commerce

"Synthesis of Some Phosphorus Derivatives of 3-(piperidyl-2)-  
pyridine"

Ivanovo, IVUZ Khimiya i Khimicheskaya Tekhnologiya, vol 16, No 7,  
1973, pp 1066-1068

Abstract: In attempts to prepare new insecticides, 3-(piperidyl-  
2)pyridine was reacted with  $PClXRR'$ , where  $R = R' = CH_3, OCH_3,$   
 $OC_2H_5, OC_3H_7, OC_4H_9,$  or  $N(CH_3)_2$  and  $X = O$  or  $S$ . The yield of 3-  
[(1'-dialkyl(thio)phosphate)-piperidyl-2']pyridine, in absolute  
ether at 20-22°C, was 35 to 80%. The products were separated by  
preparative chromatography on aluminum oxide as colorless liquids  
that rapidly darkened in air. The structures were confirmed by IR  
spectrography. The properties of the products are tabulated.

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USSR

UIC 547.824+547.26'118

KUKHTA, Ye. P., and FOROSTYAN, Yu. N., Krym Agricultural Institute imeni M. I. Kalinina and the Zaporozh Branch of the Donetsk Institute of Soviet Commerce

"Studies of a Series of Dipiperidines. Part 14. Synthesis of Phosphorus Derivatives of Hexahydrodipiperidine"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 5, 1972, pp 1039-1041

Abstract: Compounds of the following types -- alkyl(N-hexahydrodipyriddy) methyl chlorophosphate, -methylthiochlorophosphine,  $\beta$ -fluoroethyl chlorophosphate and - $\beta$ -fluoroethyl thiochlorophosphate -- were synthesized in order to examine their potency as insecticides. Preparation involved the reaction of 2,2-; 3,3-; 4,4-; and 2,3-hexahydrodipyridines with the dichloroanhydrides of methylphosphoric, methylthiophosphoric,  $\beta$ -fluoroethylphosphoric, and fluoroethylthiophosphoric acids at  $-5^{\circ}$  to  $0^{\circ}\text{C}$  in anhydrous ether. Physical data, elemental composition and major IR peaks are given for the ten compounds prepared.

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USSR

UDC 632.951

KUKHTA, Ye. P., MASHCHENKO, N. D., FOROSTYAN, Yu. N., and TSVETOVA, N. T.,  
Crimean Agricultural Institute

"The Toxicity of a Number of New Amides of Phosphoric Acids for the Crimean  
Grape Snout Beetle"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 10, No 6, 1972, pp 40-43

Abstract: Laboratory and field tests were conducted to determine the toxicity of the new amides in comparison with known insecticides. In the laboratory test 50 beetles were placed in each of a number of Petri dishes, grape leaves were added for feed, then the insecticide being tested was applied in recommended concentrations. During the experiment the Petri dishes were placed in a cupboard with forced ventilation, to remove any fumigating effect. The temperature was maintained at 20-22° C and the humidity at 70-80%. In the laboratory tests the preparations gardona, cldial and metaphosphate of known insecticides, and the new compounds KF-4, KF-3 and KF-2 proved most effective. In the field tests the best results were obtained with cldial, metaphosphate, metathion, and the new compound KF-4. Dead beetles from each test were pulverized in porcelain crucibles and insecticide residue was collected along with other elements. Evidence of the precise action of the insecticides and the formation of choline was also found by this method.

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1/2 009 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--ON SINGULAR AND QUASISINGULAR ORDERS OF CURVATURE OF INTEGRAL  
CURVES IN A THREE DIMENSIONAL SPACE -U-  
AUTHOR-(02)-KUKLES, I.S., PERSIOSKAYA, L.R.

COUNTRY OF INFO--USSR

K

SOURCE--KAZAN', IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY, MATEMATIKA, NO 2,  
FEB 70, PP 32-39  
DATE PUBLISHED-----70

SUBJECT AREAS--MATHEMATICAL SCIENCES

TOPIC TAGS--DIFFERENTIAL EQUATION SYSTEM, CURVE GEOMETRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--2000/1437

STEP NO--UR/0140/70/000/002/0032/0039

CIRC ACCESSION NO--AP0125071

UNCLASSIFIED



2/2 009

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125071

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE IS A CONTINUATION OF A PREVIOUS ARTICLE BY THE AUTHORS ON EXTENDING FROMMER'S METHOD TO A SYSTEM OF THREE DIFFERENTIAL EQUATIONS. THE SYSTEM CONSIDERED IS (EQUATION SHOWN ON MICROFICHE). WHERE  $M$  IS LARGER THAN OR EQUAL TO 1, AND  $P$  AND  $Q$  ARE POLYNOMIALS WITHOUT ABSOLUTE TERMS. THE PREVIOUS ARTICLE CONSIDERED CONDITIONS FOR THE EXISTENCE OF CHARACTERISTICS OF THE ABOVE SYSTEM WITH ZERO OR INFINITE ORDERS OF CURVATURE. THE PRESENT ARTICLE CONSIDERS SINGULAR, SEMISINGULAR, AND QUASISINGULAR ORDERS OF CURVATURE.

UNCLASSIFIED

1/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--ACCELERATED PROVING GROUND TESTING OF SOME TRUCK ASSEMBLIES -U-

AUTHOR--(04)--BURDASOV, I.YE., KUKHLIN, I.YE., PAVLENKO, V.I., RETSKER, M.I.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, AVTOMOBIL'NAYA PROMYSHLENNOST', NO 2, 1970, PP 23-25

DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, METHODS AND EQUIPMENT

TOPIC TAGS--AUTOMOBILE, BIBLIOGRAPHY, ENGINE TEST FACILITY, CARGO TRUCK,  
HIGHWAY CONSTRUCTION, TEST FACILITY, VEHICLE PROVING GROUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1218

STEP NO--UR/0113/70/000/002/0023/0025

CIRC ACCESSION NO--AP0123182

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--30JCT70

CIRC ACCESSION NO--AP0123182

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SUMMARY CHARACTERISTICS ARE GIVEN OF SPECIAL PAVED ROADS AND "SHORT WAVE" TYPE ROADS CONSTRUCTED AT THE AUTOMOBILE TESTING RANGE OF NAMI (THE CENTRAL SCIENTIFIC RESEARCH INSTITUTE OF AUTOMOBILES AND AUTOMOBILE ENGINES). RESULTS FROM TESTING TRUCKS ON THESE ROADS ARE GIVEN. THE OBTAINED RESULTS ARE ANALYZED.

UNCLASSIFIED

USSR

UDC: 621.373:530.145.6

BYKOVSKIY, V. F., GORELIK, A. V., KULIKOVA, T. A., ~~KUKHMISTROV,~~  
V. S., OSTAPENKO, Ye. P., and SHEVCHENKO, Yu. N.

"Exciting Ion Lasers With an A-C Current of Industrial Frequency"

Elektron. tekhnika. Nauchno-tekhn. sb. Gazorazryadn. pribory  
(Electronic Engineering, Scientific-Technical Collection, Gas  
Discharge Devices) 1970, No. 3(19), pp 28-32 (from RZh-  
Radiotekhnika, No. 3, March 71, Abstract No. 3D251)

Translation: The possibility of exciting ionic lasers with an a-c  
current of industrial frequency is demonstrated. The peculiari-  
ties of their operation in single- and triple-phase excitation are  
investigated. Author's abstract

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1/2 020

TITLE--A CYBERNETIC READER -U- UNCLASSIFIED

PROCESSING DATE--11SEP70 ✓

AUTHOR--KUKHOVALSKIY, V.

COUNTRY OF INFO--USSR

SOURCE--SOVETSKAYA LATVIYA, JUNE 23, 1970, P 2, COLS 4-5

DATE PUBLISHED--23JUN70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--COMPUTER LANGUAGE, AUTOMATIC READER, ELECTRONIC EQUIPMENT,  
MOVABLE FEED SCANNING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1614

STEP NO--UR/9019/70/000/000/0002/0002

CIRC ACCESSION NO--AN0108034

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UNCLASSIFIED

2/2 020  
CIRC ACCESSION NO--AN0108034 UNCLASSIFIED PROCESSING DATE--11SEP70  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INSTITUTE OF CYBERNETICS OF  
THE UKRAINIAN ACADEMY OF SCIENCES HAS DEVELOPED AN ELECTRONIC SCANNER  
CAPABLE OF READING RUSSIAN TYPEWRITTEN TEXTS AT THE RATE OF ONE PAGE IN  
SEVEN SECONDS. THE SCANNER RECOGNIZES ALL CHARACTERS OF RUSSIAN  
TYPEWRITER, INCLUDING ARABIC FIGURES AND PUNCTUATION SYMBOLS.  
ACCORDING TO ACADEMICIAN V. M. GLUSHKOV, VICE PRESIDENT OF THE UKRAINIAN  
ACADEMY OF SCIENCES, THE SCANNER IS CAPABLE OF RECOGNIZING AND  
TRANSLATING INTO COMPUTER LANGUAGE MORE THAN 200 CHARACTERS PER SECOND.  
BESIDES, IT IS COMPATIBLE WITH ANY COMPUTER HARDWARE.

UNCLASSIFIED

1/2 020  
TITLE--A CYBERNETIC READER -U- UNCLASSIFIED  
PROCESSING DATE--11SEP70  
AUTHOR--KUKHOVALSKIY, V. *K*  
COUNTRY OF INFO--USSR  
SOURCE--SOVETSKAYA LATVIYA, JUNE 23, 1970, P 2, COLS 4-5  
DATE PUBLISHED--23JUN70  
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.  
TOPIC TAGS--COMPUTER LANGUAGE, AUTOMATIC READER, ELECTRONIC EQUIPMENT,  
MOVABLE FEED SCANNING  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1989/1614 STEP NO--UR/9019/70/000/000/0002/0002  
CIRC ACCESSION NO--AN0108034  
UNCLASSIFIED  
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2/2 020

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--A00108034

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INSTITUTE OF CYBERNETICS OF THE UKRAINIAN ACADEMY OF SCIENCES HAS DEVELOPED AN ELECTRONIC SCANNER CAPABLE OF READING RUSSIAN TYPEWRITTEN TEXTS AT THE RATE OF ONE PAGE IN SEVEN SECONDS. THE SCANNER RECOGNIZES ALL CHARACTERS OF RUSSIAN TYPEWRITER, INCLUDING ARABIC FIGURES AND PUNCTUATION SYMBOLS. ACCORDING TO ACADEMICIAN V. M. GLUSHKOV, VICE PRESIDENT OF THE UKRAINIAN ACADEMY OF SCIENCES, THE SCANNER IS CAPABLE OF RECOGNIZING AND TRANSLATING INTO COMPUTER LANGUAGE MORE THAN 200 CHARACTERS PER SECOND. BESIDES, IT IS COMPATIBLE WITH ANY COMPUTER HARDWARE.

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UNCLASSIFIED



1/2 020 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--A CYBERNETIC READER -U-  
AUTHOR--KUKHOVALSKIY, V. R  
COUNTRY OF INFO--USSR  
SOURCE--SOVetskaya LATVIYA, JUNE 23, 1970, P 2, COLS 4-5  
DATE PUBLISHED--23JUN70  
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.  
TOPIC TAGS--COMPUTER LANGUAGE, AUTOMATIC READER, ELECTRONIC EQUIPMENT,  
MOVABLE FEED SCANNING  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1989/1614 STEP NO--UR/9019/70/000/000/0002/0002  
CIRC ACCESSION NO--AN0108034  
ZZZZZZZZZZZZ UNCLASSIFIED

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CIRC ACCESSION NO--AN0108034

UNCLASSIFIED

PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE INSTITUTE OF CYBERNETICS OF THE UKRAINIAN ACADEMY OF SCIENCES HAS DEVELOPED AN ELECTRONIC SCANNER CAPABLE OF READING RUSSIAN TYPEWRITTEN TEXTS AT THE RATE OF ONE PAGE IN SEVEN SECONDS. THE SCANNER RECOGNIZES ALL CHARACTERS OF RUSSIAN TYPEWRITER, INCLUDING ARABIC FIGURES AND PUNCTUATION SYMBOLS. ACCORDING TO ACADEMICIAN V. M. GLUSHKOV, VICE PRESIDENT OF THE UKRAINIAN ACADEMY OF SCIENCES, THE SCANNER IS CAPABLE OF RECOGNIZING AND TRANSLATING INTO COMPUTER LANGUAGE MORE THAN 200 CHARACTERS PER SECOND. BESIDES, IT IS COMPATIBLE WITH ANY COMPUTER HARDWARE.

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UNCLASSIFIED

Optical

USSR

UDC 621.375.826

KUKHTA, A. V.

"Long Wave 27.9 micron Quantum Generator"

Moscow, Pribery i Tekhnika Eksperimenta,

No 6, 1971, pp 143-145

Abstract: The structural design and basic parameters are presented for a small continuous-action  $H_2O$ -laser for the far infrared region of the spectrum with  $\lambda = 27.9$  microns and an output power of 0.2 milliwatts. In the laser, the steam is excited by a DC electric charge. The intake of the discharge is ~400 watts. The molybdenum glass discharge tube is 960 mm long with an inside diameter of 2 cm. The short-term stability of the radiation power is ~5 percent/min. The long term stability can be improved by using a quartz discharge tube. Experiments in moving the anode along the discharge tube showed that the minimum discharge length measured from the cathode extension to the anode for which generation is observed is 450 mm. On changing the discharge length from an initial value of 795 to 555 mm, the generation power decreases by 10 times.

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Organophosphorous Compounds

USSR

UDC 547.824+547.26'118

FOROSTYAN, Yu. N., YEFIMOVA, Ye. I., KUKHTA, Ye. P., and SOROKA, I. I.,  
Zaporozh'ye Branch of the Donetsk Institute of Soviet Trade, and the Crimean  
Agricultural Institute imeni M. I. Kalinin

"Study of a Series of Bipiperidines. X. Reaction of Hexahydrodipiperidines  
With Phosphoryl Chlorides"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 11, Nov 1971, pp 2,438-2,441

Abstract: In light of the demonstrated alkylating action of diethyl chloro-  
phosphate and diethyl chlorothiophosphate on pyridine, it was of interest to  
determine the nature of their reactions with hexahydrobipyridines, which con-  
tain both pyridine and piperidine rings. Eight 2,2'-, 3,3'-, 4,4'- and 3,2'-  
hexahydrobipyridines react with the acid chlorides of the diethyl ester of  
phosphoric and thiophosphoric acids at  $-15^{\circ}\text{C}$  to form the corresponding com-  
plex compounds. At  $+20-22^{\circ}\text{C}$ , the corresponding [1'-(diethyl phosphate and  
diethyl thiophosphate)piperidyl] pyridines. Formulas, basic physical data,  
yields, etc., of the end-products are given.

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1/2 008  
UNCLASSIFIED  
TITLE--PREPARATION OF LUPININE AND ANABASINE -U- PROCESSING DATE--04DEC70  
AUTHOR--(03)-FOROSTYAN, YU.N., YEFIMOVA, YE.I., KUKHTA, YE.P.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. PRIR. SOEDIN. 1970, 6(2), 276  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--PROCESSED PLANT PRODUCT, ALKALOID, FRACTIONATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3005/0453 STEP NO--UR/0393/70/006/002/0276/0276  
CIRC ACCESSION NO--AP0132668  
UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--06DEC70

CIRC ACCESSION NO--AP0132668

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LOW BOILING FRACTION OF ALKALOIDS FROM ANABASIS APHYLLA MAY BE SEPD. USING ACETYLATION WITH AC SUB2 O; THE ACETYL DERIVS. OF LUPININE (I) AND ANABASINE (II) MAY BE SEPD. AS A RESULT OF DIFFERENCES IN B.P. THUS, 500 G OF A MIXT. OF ALKALOIDS FROM TECHN. II.H SUB2 SO SUB4 WAS MIXED WITH 320 G AC SUB2 O WITH STIRRING AND COOLING AND THE MIXT. HEATED FOR 10 HR AND FRACTIONATED. THE ACETYL DERIV. OF I WAS OBTAINED AS THE FIRST FRACTION, B SUB2 115-17DEGREES, N PRIME20 SUBD 1.5580, (73PERCENT). THE SAPON. WITH 25PERCENT NAOH FOR 1 HR GAVE FREE I, M. 68-70DEGREES. THE SECOND FRACTION, B SUB2 198-200DEGREES (ACETYL DERIV. OF II) GAVE AFTER HYDROLYSIS WITH 25PERCENT H SUB2 SO SUB4 (6 HR) PURE II, B SUB1 105-6DEGREES (85PERCENT). APHYLLIDINE AND APHYLLINE WERE NOT ISOLATED FROM THE TARS. FACILITY: ZAPOROZH. FILIAL, DONEYS. INST. SOY. TORG., ZAPOROZHE, USSR.

UNCLASSIFIED

USSR

UDC: 547.94:341

KUKHTA, YE. P., and FOROSTYAN, YU. N., Crimean Agricultural Institute imeni  
M. I. Kalinin, Simferopol, Ministry of Agriculture USSR

"Lupinin Esters of Certain Dialkylphosphoric Acids"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 3, 1970, p 383

Abstract: Lupinin with m. p.  $69^{\circ}$  (petroleum ether) was prepared by saponification of O-acetyllupinin, isolated when total alkaloids of technical anabasin sulfate is acetylated with acetic anhydride. Upon reaction with lupinin, the acid chlorides  $\text{Cl-P(O)(OCH}_3)_2$ ,  $\text{Cl-P(O)(OC}_2\text{H}_5)_2$ ,  $\text{Cl-P(O)(OC}_4\text{H}_9)_2$ , etc. yielded esters of dialkylphosphoric and dialkylthiophosphoric acid for determination of insecticidal activity. Additionally, conditions for their separation on  $\text{Al}_2\text{O}_3$  and also for chromatography in a thin unstabilized  $\text{Al}_2\text{O}_3$  layer were found.

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USSR

UDC: 537.2.222

VINETSKIY, V. L. and KUKHTAREV, N. V.

"Solving the Poisson Equation for a Periodic Distribution of a Static Charge"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, Vol 17, No 2, 1972, pp 334-336

Abstract: The Poisson equation that must usually be solved in handling actual problems in the physics of semiconductors is of the form

$$\lambda \Phi''_{yy} = F(y) - e^{-\Phi},$$

where  $\Phi = e\phi/kT$ ,  $\phi$  is the electrostatic potential in a crystal having a static charge  $eN$ ,  $N(x)$  is the unidimensional impurity distribution with a period  $d$ ,  $y = x/d$ . A periodic solution for this equation is found, although the solution is not exact but approximate, being based on the condition, usually realized in practice, that  $\lambda \ll 1$ . Under this condition, the equation is a nonanalytic function of  $\lambda$  and has a singularity for  $\lambda \rightarrow 0$ ; hence, the standard small-parameter method is inapplicable. For other conditions, alternative methods are proposed. The authors express their gratitude to A. B. Vasil'yeva for her advice.

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USSR

KUKHTENKO, A. I., SEMENOV, V. N., UDILOV, V. V.

"Abstract Theory of Systems. Present Status and Trends of Development"

Kiev, Kibernetika i Vychislitel'naya Tekhnika, No 15, 1972, pp 4-22

Abstract: The present state of the abstract theory of systems is briefly described and the deductive and inductive paths of its development are compared. The properties of reducibility of algebraic matrix representations of algebras and representation of algebras by differential forms (external algebra and the group ring) are studied on the abstract-algebraic level of description. The relationship is established between the reducibility of a group ring and the reducibility of the matrices of linear dynamic systems having group symmetry, and also between the reducibility of an external algebra and the property of controllability of dynamic systems. The approach is illustrated with examples. The constructions studied at the abstract-algebraic level illustrate a possible and very productive approach to the production of abstract system theory. Abstract system theory allows new constructive results to be produced for a precisely defined class of systems and also allows the corresponding generalizations to be made, fully confirming the fruitfulness of the construction of abstract theories for the study of systems of any nature.

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USSR

UDC 629.78.062.2

KUKHTENKO, A. I., UDILOV, V. V.

"Use of the Theory of Representations of Groups for Solution of Problems of Stabilization of Elastic Space Objects"

Kibernet. i Vychisl. Tekhn. Resp. Mezhd. Sb. [Cybernetics and Computer Equipment Republic Interdepartmental Collection], No 8, 1971, pp 4-17, (Translated from Referativnyy Zhurnal, Raketostroyeniye, No 10, 1971, Abstract No 10.41.141, from the Resume).

Translation: This work demonstrates a method for composition of the equations of elastic oscillations of symmetrical moving objects. It is shown how the theory of matrix representations of groups can be used to divide multidimensional problems into problems of lower dimensionalities. A possibility is discussed of using the method described to study processes of control of elastic space objects. 13 Figures; 1 Table; 8 Biblio. Refs.

USSR

UDC: 53.077.06+53.001.5

KUZNETSOV, V. I., TRYKOV, L. A., TRYKOV, O. A.

"A One-Crystal Scintillation Spectrometer (With Organic Phosphor)"

Odnokristal'nyy stsintillyatsionnyy spektrometr (s organicheskimi fosforami),  
(cf. English above), Moscow, Atomizdat, 1971, 136 pp, ill. 86 k. (from REK-  
-Fizika, No 4, Apr 72, Abstract No 4A612 K)

Translation: This is a practical handbook on spectrometry using a single scintillation crystal with an organic phosphor (stilbene, liquid scintillators). The book describes methods for discriminating a background of gamma radiation or neutrons as well as methods for converting amplitude distributions to neutron or gamma-ray energy spectra. Examples of using the spectrometer are given (investigation of reactor emission, spectra and isotope sources of neutrons; measurement of the integral and differential cross sections of neutron reactions). A. V.

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USSR

WDG 655.887 : 621.039.9  
(355)

KUKHTEVICH, V.I., GORYACHEV, I.V., TRYKOV, L. A.

ZASHCHITA OT PRONIKAYUSHCHEY RADIATSII YADERNOGO VZRYVA (Protection Against the Penetrating Radiation of a Nuclear Explosion), Moscow, Atomizdat, 1970, 150 pp, illus, biblios, 3,050 copies printed

Presents an engineering method of designing ground structures for the protection against the penetrating radiation of nuclear explosion. Since the nuclear explosion as a source of penetrating radiation is well treated in the literature, only its general characteristics are discussed here. Emphasis is placed here on neutrons and gamma rays produced at the atmosphere-ground interface and on the penetration of radiation through the typical protective media for the geometry inherent in protective structures. The book is intended for scientific and technical personnel engaged in radiation protection work.

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1/2	89-102

USSR

KUKHTEVICH, V. I., et al., ZASHCHITA OT PRONIKAYUSHCHEY RADIATSII YADERNOGO VZRYVA (Protection Against the Penetrating Radiation of a Nuclear Explosion), Moscow, Atomizdat, 1970, 190 pp

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USSR

UDC 669.162.267.4:669.046.521

KUKHTIN, T. I., and DUNAYEV, N. YE.

"Effectiveness of Injection of Slag-Forming and Desulfurizing Solid Reagents to the Hearth of a Blast Furnace"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 28-40

Translation: The decrease in the yield of slag related to the development of enrichment of ores increases the requirement for stability of the slag mode and worsens the desulfuration conditions in a blast furnace. Injection of fluxing and desulfurizing reagents directly to the hearth of the furnace allows these problems to be solved and also decreases the basicity of the sinter and thereby increases its quality.

Calculations based on the melting conditions of the Karagandinskiy Metallurgical Plant have shown that when fluxes are introduced to the hearth of the furnace, a savings of coke can be achieved (up to 4%) with more rapid performance of the process. 3 figures; 4 tables; 30 biblio. refs.

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USSR

UDC 547.341

KORMACHEV, V. V., MERKULOV, A. V., and KUKHTIN, V. A., Chuvash State  
University imeni I. N. Ul'yanov

"Reaction of Phosphorus Pentachloride With Alkadienes"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 10, Oct 73, pp 2157-2159

Abstract: The reaction of phosphorus pentachloride with 2,4-hexadiene was investigated. The addition products of phosphorus pentachloride with butadiene, isoprene, and 2,4-hexadiene were decomposed with a solution of white phosphorus in phosphorus trichloride yielding 4-chloro-2-alkenyldichlorophosphines. These products were reacted with alcohols and mercaptans in presence of triethylamine to yield dialkoxy (dialkyldithio) 4-chloro-2-alkenylphosphonites.

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USSR

UDC 547.341

NASAKIN, O. Ye., KORMACHEV, V. V., MIKHAYLOV, Z. I., and KURMUTIN, V. A.,  
Chuvash State University imeni I. N. Ul'yanov

"Reaction of Di( $\beta$ -chloroethyl) Vinylphosphonate With Trialkylsilyl-  
alkanethiols"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 12, Dec 73, pp 2786-2787

Abstract: Di( $\beta$ -chloroethyl) vinylphosphonate reacts easily with tri-  
alkylsilylalkanethiols under UV light for 18-20 hrs at 30-35° yielding  
di( $\beta$ -chloroethyl)  $\beta$ -(trialkylsilylalkylthio)ethylphosphonates, as a  
result of an anti-Markovnikov's addition.

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USSR

UDC 620.178.2

BAKSHI, O. A., KUKIN, A. G., and MONOSHKOV, A. N., Chelyabinsk, Chelyabinsk Polytechnical Institute

"A Method of Evaluating the Reliability of Materials and Welded Joints, Operating at Low Temperatures"

Kiev, Problemy Prochnosti, No 8, Aug 70, pp 70-73

Abstract: A method for evaluating the resistance of materials and welded joints to brittle fracture is presented. The method is based on tensometric recording of the process of impact flexure of samples, with subsequent processing of the stress-time oscillogram, for determining the energy of crack formation and propagation, the average speed of crack development, the impact strength, and the breaking point of a sample. A specially designed sample with three notches was used for comparative evaluation of the properties of characteristic sections of materials and welded joints. A procedure is outlined for determining the elastic energy of a sample-machine system for any time instant of sample deformation, right up to the formation of a critical crack in it. Oscillograms of impact flexure of standard and notched samples with a soft interlayer are presented.

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Welding

USSR

UDC 620.178.2

BAKSHI, O. A., KUKIN, A. G., and MONOSHKOV, A. N., Chelyabinsk Polytechnical Institute

"Effect of the Mechanical Inhomogeneity of Welded Joints on Their Resistance to Brittle Failures Under Low-Temperature Conditions"

Kiev, Problemy Prochnosti, No 10, Oct 70, pp 106-108

Abstract: The effect of the mechanical inhomogeneity of welded joints at low temperatures on the indices of the specific energy of crack formation and propagation, impact toughness, and breaking force was investigated. It is demonstrated that a mechanical inhomogeneity significantly affects the breaking parameters to be determined. The incorrectness of estimating mechanical inhomogeneities of joints from results of impact bending tests of standard specimens is substantiated.

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USSR

UDC 621.371:538.569.4:551.57

DRYAGIN, Yu. A., LUBYAKO, L. V., and KUKIN, L. M.

"Signal Attenuation by Fog and Snowfalls ( $\lambda = 1.3$  mm)"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tesisy dokl.  
(Tenth All-Union Conference on the Propagation of Radio Waves;  
Report Theses--collection of works) "Nauka," 1972, pp 86-88 (from  
RZh--Radiotekhnika, No 10, 1972, Abstract No 10A316)

Translation: The technique of measuring the attenuation using  
transceiver equipment with two paraboloid of revolution antennas  
located 1.6 km. from the transmitting-receiving point of a corner  
reflector is described. Bibliography of four. N. S.

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USSR

KUKINOV, A. M., POLYAKOV, V. G., UDACHIN, G. F., KHOROVA, L. A.

"Experiment on Recognition of Manuscript Numerals Using a Tracking Scan"

Opoznavaniye i Opisaniye Liniy [Recognition and Description of Lines -- Collection of Works], Moscow, Nauka Press, 1972, pp 108-118 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V707 by the authors).

Translation: A model is described of an automaton for reading of non-stylized manuscript arabic numerals. The model calls for a tracking scan of a pattern around its outside contour, recognition using a system of characteristics and a nonparametric method of production of the decision rule.

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USSR

KUKINOV, A. M., OGANOV, O. A.

"Automatic Input and Processing of Patterns Formed by Flows of Lines"

Opoznavaniye i Opisaniye Liniy [Recognition and Description of Lines -- Collection of Works], Moscow, Nauka Press, 1972, pp 139-154 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V715 by the authors).

Translation: Algorithms and apparatus are described, developed for digital computer input of patterns represented as flows of lines. The reading device used is a program-controlled digital scanner. A class of patterns is studied, the angular description of which is a harmonic function of coordinates.

KUKISHEV, S. P.

SOME REGULARITIES IN CHANGES IN THE FREQUENCY OF CARDIAC CONTRACTIONS DURING INVERSION OF THE USUAL DIURNAL RHYTHM IN MAN UNDER ISOLATION CONDITIONS  
Article by S. P. Kukishnev, Moscow, *Kosmicheskaya Biologiya i Medicina*, Russian, Vol. 6, No. 1, pp. 43-53, 1972, submitted for publication 29 July 1971

ENC 611172-2-201000-377

TPN 55687

**Abstract:** Three 43-day experiments were conducted with human subjects for studying diurnal variations in heart rate during an inverted (12-hour displacement) work and rest cycle under isolation conditions. The test subjects adjusted themselves to the new cycle using social time standards, especially a stereotyped and precisely observed daily schedule. Changes in the heart rate as related to the circadian rhythm occurred immediately after inversion. However, four subjects exhibited a decrease in the range of heart rate diurnal variations (the difference between mean values recorded during the daytime and nighttime hours) due to a decline in the daytime values. The range of heart rate values returned to the reference level within one to 22 days. Five of the six test subjects exhibited insignificant variations in the night heart rate.

The need for around-the-clock watches aboard a spaceship dictates that the individual crew members periodically perform professional tasks at hours of the day unusual for work, coinciding with the period of sleep at the home. At the same time, much material has been accumulated indicating that changes in the usual diurnal sleep and wakefulness rhythm with man's movement into a zone with a different local time are accompanied by different impairments covered by the term desynchronization. Various manifestations of desynchronization are encountered more frequently among pilots making transmeridional flights than among representatives of other professions (Nauty and Adams).

Desynchronization phenomena were noted during change in the customary work and rest regime under conditions of unchanged environmental factors. Most authors in studying this problem conclude that a total restructuring of the rhythm of physiological functions does not occur under ordinary living conditions (E. I. Brandt and O. N. Margolina, 1948, 1954; Ye. L. Sklyarchik;

Acc. Nr: **AP0044191**

Ref. Code: UR 0239

PRIMARY SOURCE: **Fiziologicheskiy Zhurnal**, 1970, Vol 56,  
Nr 1, pp 77-83

ON THE IMPORTANCE OF MEDIATOR NORADRENALINE IN FORMING  
SPONTANEOUS MECHANIC ACTIVITY OF SMOOTH MUSCLE

By **M. A. Kukh**

From the Departm. of Normal Physiology I. P. Pavlov Institute, Leningrad

The spontaneous mechanic activity of the dog retractor muscle in situ was investigated, the amount of mediator secreted from the sympathetic nervous terminals of the muscle being simultaneously either diminished or increased by means of pharmacological substances.

It became apparent that the administration of blockers of the reuptake of noradrenaline into the nervous terminals (cocaine, imipramine, guanethidine) into the isolated blood circulation of the muscle under investigation increases the existing spontaneous contractions and causes rhythmic mechanic activity in preparations devoid of spontaneous mechanic activity previous to administering drugs.

Upon depleting the intraneuronic pools of sympathetic mediator by administering guanethidine subcutaneously 24 and 48 hours earlier the spontaneous mechanic activity

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of the muscle either does not exist at all or is barely noticeable. In 72 hours there appear faint spontaneous contractions similar to those appearing after the degeneration of the sympathetic nerve.

A conclusion is drawn that the noradrenaline released from the presynaptic apparatus of the sympathetic neuron plays an important role in forming the spontaneous mechanic activity of the dog retractor penis muscle.

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UDC 615.31:546.347.033

USSR

SARATIKOV, A. S., SAMOYLOV, N. N., SUBBOTIN, V. F., ~~RUZHENKO, V. G.~~ and  
FILIPENKO, YU. A., Tomsk Medical Institute

"The Distribution of Lithium in the Body and Its Elimination"

Moscow, Zhurnal Nevropatologii i Psikhatrii imeni S. S. Korsakova,  
Vol 71, No 11, 1971, pp 1,709-1,712

Abstract: Lithium was administered to mice, and upon sacrifice of the animals its content was determined by the flame photometry method. Statistically processed results demonstrated that the accumulation of lithium after a single administration of its salts in doses of  $1/3$  to  $1 \text{ LD}_{50}$  was manifested to the highest degree in the kidneys, then in order of diminishing values, in the heart, lungs, spleen, muscles, liver, and brain. The method of administration, dosage and anion type of lithium salt have no significant effect on the nature of distribution, accumulation, or elimination of the metal from the body, whereas the rapidity of its accumulation in the tissues depends on the type of tissue, method of administration and dosage. A Study of the dynamics of elimination of lithium from the tissues revealed its selective retention by the brain.

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UDC: 517.917

USSR

KUZEL'S, I. S. and FUTILOVA, R. I.

"The Characteristics of an Origin With Semi-Singular Orders of Curvature"

Kazan', Izvestiya VUZ--Matematika, No 8(123), 1972, pp 70-80

Abstract: The origin is here defined as an isolated singular point, where the zero curves have specified orders of curvature. Two exceptions for the system of coordinates built around this origin are noted. The circumstances for the first of these, in which  $m$  and  $n$  of the following equations,

$$\frac{du}{dx} = \frac{X_1(u, y_1, z)}{z^m Z_1(u, y_1, z)}, \quad \frac{dy_1}{dz} = \frac{Y_1(u, y_1, z)}{z^n Z_1(u, y_1, z)},$$

are less than unity, have been studied in detail by the first of the authors named above in two earlier articles published in the same journal (Rasprostraneniye metoda Frobeniya na sistemy trekh differentsial'nykh uravneniy -- Extension of the Frobenius Method to a System of Three Differential Equations, 1968, No 9, pp 44-54; Ob osobykh i kvaziosobykh porядках krivizny -- Singular and Quasi-Singular Orders of Curvature, 1970, No 2, pp 32-39). The second, 1/2

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USSR

UDC: 517.917

KUKLES, I. S., et al, Izvestiya VUZ--Matematika, No 8(123), 1972, pp 70-80

in which either  $m$  or  $n$  may be less than one or both greater than one, is discussed in the present paper. Because the orders of curvature of the zero curves are semi-singular, the system of equations reproduced above has zero, semi-singular orders of curvature. The condition that the characteristics of the system intersect the plane  $z = 0$  is a condition of this second exception.

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USSR

UDC 517.925.12

KUKLES, I. S., ROZET, I. G., Samarkand State University imeni  
A. Navoi

"On Singular Separatrix Cycles of a Quadratic Differential  
Equation Having a Straight Line As Solution"

Minsk, Differentsial'nyye Uravneniya, Vol 7, No 10, Oct 71, pp  
1813-1818

Abstract: The quadratic equation

$$\frac{dy}{dx} = \frac{Q_2(x, y)}{P_2(x, y)}$$

( $Q_2(x, y)$ ,  $P_2(x, y)$  are complete second-degree polynomials),  
which has a straight line as solution, is usually considered in  
the form

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KUKLES, I. S. et al, Differentsial'nyye Uravneniya, Vol 7, No 10, Oct 71, pp 1813-1818

$$\frac{dy}{dx} = \frac{Q_2(x, y)}{xy}$$

The study is made in Poincare's circle. The article considers the case where the singular points on the axis  $y = 0$  are on different sides of the solution  $x = 0$ , while the singular points on the axis  $x = 0$  and on the diameter (for which  $x \neq 0$ ) are on one side of the axis  $y = 0$  (multiple singular points of the saddle point type on the vertical diameter in the finite part of the plane or on the diameter are possible). It is shown that in this case exact necessary and sufficient conditions can be given for the existence of singular separatrix cycles with two types of essential elements.

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equations. There are two bibliographic references.  
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USSR

UDC 517.917

KUKLES, I. S., KUR'YANOVA, Z. N.

"On a Qualitative Study of the Behavior of the Characteristics of One Differential Equation in a Poincaré Circle"

Tr. Samarkand. un-ta (Works of Samarkand University), 1970, No. 181, pp 61-74  
(from RZh-Matematika, No 4, Apr 71, Abstract No 43203)

Translation: The behavior of the characteristics of the following equation are studied (under certain restrictions):

$$dy/dx = P_2(x, y)/Q_2(x, y)$$

in a Poincaré circle ( $P_2$  and  $Q_2$  are second-degree polynomials). Authors abstract.

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USSR

UCC 517.917

KUKLES, I. S. and ROZET, I. G., Samarkand

"Certain Signs of the Absence of Limit Cycles"

Kazan', Izvestiya Vysshikh Uchebnykh Zavedeniy--Matematika, No. 5, May 70,  
pp 53-56

Abstract: Signs of the absence of limit cycles for a differential equation of the type  $y \, dy/dx = -x + \lambda y + ax^2 + bxy + cy^2$  (1)

are considered for the case  $a \neq 0$  and for the case  $a = 0$ . Criteria for the absence of limit cycles for an equation of the type (1) in the case  $a \neq 0$  have been given previously and it was shown that if  $\lambda \geq b/a$ , the origin of the coordinates for equation (1) is acyclic, as shown by a comparison with a topographical system obtained from (1) for  $\lambda = b = 0$ . Criteria for the absence of limit cycles presented in this article for the case  $a \neq 0$  are more general than the above criteria, which follow from those presented here as special cases.

USSR

KUKLAS, I. S. and ROZET, I. G., Izvestiya vysshikh uchebnykh zavedeniy--Matematika, No. 5, May 70, pp 53-56

It is shown that if the expression

$$|\lambda| \geq |c/b| \text{ holds,}$$

an equation of the type

$$y \, dy/dx = -x + \lambda y + bxy + ay^2$$

does not have limit cycles.

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UDC 517.917

KUKLES, I. S., PERSIDSKAYA, L. B., Samarkand

"On Singular and Quasisingular Orders of Curvature of Integral Curves in a Three-Dimensional Space"

Kazan', Izvestiya Vysshikh Uchebnykh Zavedeniy -- Matematika, No 2, Feb 70, pp 32-39

Abstract: The article is a continuation of a previous article by the authors on extending FROMMER's method to a system of three differential equations. The system considered is

$$z^m \frac{dx}{dz} = P(x, y, z); \quad z^m \frac{dy}{dz} = Q(x, y, z),$$

where  $m \geq 1$ , and  $P$  and  $Q$  are polynomials without absolute terms. The previous article considered conditions for the existence of characteristics of the above system with zero or infinite orders of curvature. The present article considers singular, semisingular, and quasisingular orders of curvature.

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USSR

UDC 616.988.73+636.4

KULESKO, I. L., Corresponding Member, All-Union Academy of Agricultural Sciences  
Imeni V. I. Lenin, Ukrainian Institute of Experimental Veterinary Science

"Development of Methods of Diagnosis and Control of Hog Cholera in the USSR"

Moscow, Vestnik Sel'skokhozyaystvennoy Nauki, No 8, Aug 72, pp 34-41

Abstract: In the beginning of the 20th century a virus strain of hog cholera was carried into Russia from Western Europe, while in the 1950's another strain of the virus of this disease was brought into the USSR from China. Immunofluorescence tests showed that the two strains differ from each other serologically. During recent years the Chinese strain was encountered most frequently at USSR farms. The best results in controlling hog cholera were obtained in countries (Canada, Sweden, Denmark) in which animals that had recovered from the disease were regarded as the principal reservoir of the virus, so that all hogs of a herd in which the disease appeared were killed and treatment of sick animals or immunization of healthy animals that had been in contact with them was forbidden. The control of the disease was less successful in countries in which, as in the USA, treatment with anti-hog cholera serum and simultaneous immunization as well as immunization with live vaccine were applied on a mass scale, while only obviously sick animals were killed. These methods contributed to

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USSR

KULESKO, I. I., Vestnik Sel'skokhozyaystvennoy Nauki, No 8, Aug 72, pp 34-41

a lasting preservation of the infection in the countries in question. In 1969 use of all preparations containing live virus was forbidden in the USA and methods for the control of hog cholera that proved successful in Canada were adopted there. Simultaneous immunization and other methods aimed at the maximum preservation of the number of animals in infected herds were never applied in the USSR as extensively as in the USA, Hungary, or Balkan countries, so that hog cholera never became as widespread in the USSR as in these countries. At the end of the 1940's, use of crystal violet vaccine was introduced in the USSR. Immunization with this inactivated vaccine gradually replaced simultaneous and passive immunization. While good results were obtained with crystal violet vaccine, its application did not lead to the preservation of the maximum number of animals in herds in regions strongly affected by the disease. On the other hand, application of live virus vaccine derived from lapinized strains obtained from the USA, China, and other countries made it possible to preserve 90% of the animals in an infected herd. In recent years mass immunization of hogs with virus vaccine from the Chinese strain and other live vaccines was introduced in the USSR and became the principal method for the control of the disease (in 1970 more than 22 million hogs were inoculated with virus vaccine in the RSFSR). The advisability of applying this method is

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USSR

KULESKO, I. I., Vestnik Sel'skokhozyaystvennoy Nauki, No 8, Aug 72, pp 34-41

open to question, however, Experiments showed that although the action of lapinized virus vaccine (ASV vaccine) on animals infected with the epizootic strain led to a high rate of recovery, the recovered animals became carriers of the epizootic strain.

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USSR

UDC 621.391.17

VORONOV, YE. V., KUKLEV, L. P.

"Improving the Noise Immunity of Uniform Code Groups in Transmission Speeds Other Than  $2^{-M}$ "

Moscow, Radiotekhnika, Vol 25, No 9, 1970, pp 15-21

Abstract: Although many codes with high noise immunity are known, they cannot be extensively used since their processing at the receiving end requires bulky decoding equipment and a large amount of computations. The authors examine a method of transmitting discrete data which provides high noise immunity with relatively simple receiving apparatus. They assume that a uniform group code is used to transmit binary information symbols, and that majority decoding is used at the receiving end. They also assume a transmission velocity of  $1/L \cdot 2^M$ , where  $L$  and  $M$  are integers and  $L \neq 1$ . If  $L$  is odd,  $n_0 - 1$  verifying symbols are transmitted between two neighboring information symbols, where  $n_0 = L \cdot 2^M$ ; such a sequence of information and verifying symbols is said to be an elementary sequence. Elementary symbols are assumed to be independently distorted, and errors in those symbols are assumed to originate in the receiver as a result of faulty operation of the threshold decoder. The authors assert that the method of synchronization used can be applied to any

USSR

VORONOV, YE. V., et al., Radiotekhnika, Vol 25, No 9, 1970, pp 15-21

system with one-shot repetition. They express their gratitude to E. M. Gabidulin and A. L. Larin for their assistance.

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1/2 028 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--SLAG FORMING MIXTURE -U-

AUTHOR--(05)-KUKLEV, V.G.; SHALIMOV, A.G., VOINOV, S.G., LUBENETS, I.A.,  
ZHUKOV, D.G.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 262,923

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRATISY, TOVARNYE ZNAKI 1970,  
DATE PUBLISHED--04FEB70

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DIOXIDE, ALUMINUM OXIDE, IRON OXIDE, CALCIUM OXIDE, MAGNESIUM OXIDE,  
SODIUM OXIDE, POTASSIUM OXIDE, CARBON

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DOCUMENT CLASS--UNCLASSIFIED

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CIRC ACCESSION NO--AA0130093

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0130093

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SLAG FORMING MIXT. FOR  
PROTECTING THE SURFACE OF A MOLTEN METAL ALLOY FROM COOLING AND OXIDN.  
DURING CASTING CONSISTED OF: SIO SUB2 36-50, AL SUB2 O SUB3 25-35, FEO  
3-10, CAO 3-9, MGO 1-4, (NA SUB2 O PLUS K SUB2 O) 0.2-4, C 9-15,  
FLUORITE 1-6, AND NA SUB2 CO SUB3 1-7PERCENT. FACILITY: BARDIN,  
I. P. CENTRAL SCIENTIFIC RESEARCH INSTITUTE OF FERROUS METALLURGY.

UNCLASSIFIED



USSR

GINZBURG, I. P., KUKLEV, Ye. A., SHALYGIN, A. S.

"Selection of Optimal Parameters of Control Systems for Flight Vehicles with Random Perturbations"

Izbr. Tr. Vses. Mezhvuz. Simpoz. po Prikl. Mat. i Kibernet, Gor'kiy, 1967  
[Selected Works of All-Union Interdepartmental Symposium on Applied Mathematics and Cybernetics, Gor'kiy, 1967], Moscow, Nauka Press, 1973, pp 157-160 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V245, by the authors).

Translation: Methods of solution of problems of analysis and synthesis of dynamic systems describing the motion of flight vehicles with random perturbations are studied. The optimal parameters of the systems are defined by methods of random or directed search. Examples are studied.

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USSR

UDC 629.7.015:629.7.054:621.391.825

KUKLEV, Ye. A., SHALYGIN, A. S.

"Investigation of Flight Dynamics of an Aircraft With Autopilot in the Presence of Interferences"

Kazan', Izvestiya Vysshikh Uchebnykh Zavedeniy, Aviatsionnaya Tekhnika, No 3, 1971, pp 96-98

Abstract: The problem of evaluating the efficiency and interference protection of a closed aircraft autopilot control system in the presence of random disturbances and various interferences is considered. This consideration is based on methods of statistical dynamics. The combined affect of certain interferences passing into the control circuit produces disturbances in the control system which are a mixture of noises and useful signal at the input of one or more measuring instruments of flight parameters. A flight of a passenger aircraft in a longitudinal plane at a given altitude is considered as an illustrative example. Altitude stabilization is achieved by the autopilot on the basis of signals from angular parameter and speed meters and signals from the radio altimeter, in the presence of interferences. Dispersions of phase coordinates and probability of certain events are taken as

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USSR

KUKLEV, Ye. A., et al, Izvestiya Vysshikh Uchebnykh Zavedeniy, Aviatsionnaya Tekhnika, No 3, 1971, pp 96-98

evaluating criteria. Calculations show the expediency of the approach used for evaluating the efficiency of control systems in the presence of interferences, and for comparing the quality of such systems on the basis of interference protection criterion.

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USSR

UDC 621.375.82

KUKLEV, Yu. I.

"Scattering of Coherent Light by a Cylindrical Electron Beam"

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works), No. 1, Moscow, 1971, pp 64-69 (from RZh-Fizika, No 7, Jul 71, Abstract No 7D1137)

Translation: The scattering of the radiation of a ruby laser by a cylindrical electron beam placed in a longitudinal magnetic field and having an electron concentration of the order of  $10^9$ - $10^{10}$  cm<sup>-3</sup> with an energy of 1-2 keV was investigated experimentally. A photon counter with time selection was used as a receiver of the scattered radiation. The results of the experimental studies of a counterbeam and a beam of optical quanta and electrons colliding at an angle of 90° are described. Authors abstract.

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USSR

UDC 627.81.014.001.5(47+57)

ASTRAKHANTSEV, V. I., KUKLIN, A. K., PULYAYEVSKIY, G. M., ROGOZIN, A. A.

"Methods of Studying Bank Processes on the Angar Reservoirs"

Tr. koordinats. soveshchaniy po gidrotekhn. (Works of the Coordinating Meetings on Hydroengineering), No 59, 1970, pp 89-93 (from RZh-Elektrotehnika i Energetika, No 2, Feb 71, Abstract No 2 D44)

Translation: Studies of the following problems are continued: a) the study of geological engineering conditions of the shore zone of Lake Baykal, Irkutsk, Bratsk and Ust'-Ilinskiy Reservoirs; b) introduction of stereophotogrammetric methods; c) development and introduction of instruments and methods of complex study of wind-wave conditions.

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USSR

UDC 533.607.11

GRIGORYEV, V. V., ISAKOV, S. N., KUKLIN, B. A.

"Shock Tube with a Diffuser Near a Diaphragm"

Trudy Leningradskogo Politekhnikheskogo Instituta, Aerotermodinamika  
(Works of the Leningrad Polytechnical Institute, Aerothermodynamics),  
No 313, 1970, pp 131-136

Translation: This article contains an investigation of various models of gas flow in a shock tube with a diffuser and in the region of small Mach numbers of the shock wave. Relations are derived which relate the intensity of the shock wave to the initial conditions in the high and low pressure chambers.

The characteristic features of the structure of a device of this type are investigated briefly. The preliminary experimental data obtained are compared with theoretical estimates. There are 5 illustrations and a 3-entry bibliography.

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USSR

UDC 577-37

CHIZMADZHEV, Yu. A., MARKIN, V. S., and KUKLIN, R. N., Institute of Electrochemistry, Academy of Sciences USSR, Moscow

"Relay-Race Transfer of Ions Through Membranes. II. Alternating Current"

Moscow, Biofizika, Vol 16, No 3, May/Jun 71, pp 437-442

Abstract: By applying the relay-race model of ion transfer, passage of an alternating current through an artificial bimolecular phospholipid membrane upon addition of inhibitors of oxidative phosphorylation is considered. The same assumptions in regard to the membrane and the uncouplers are made as those in a preceding study by the authors of the passage of a direct current (Biofizika, Vol 16, No 2, 1971). Relationships between impedance of the membrane and the effects of pH and frequency on capacitance and conductance are derived. The transfer current upon rapid fixation of the potential on the membrane is calculated. The results show that on assumption of an alternating current the relay-race model leads to electrochemical properties of the membrane that differ from those obtained on the basis of a mobile carrier model, whereas the properties of the membrane are the same for either model if a direct current is assumed. One can therefore determine, by carrying out measurements with an alternating current, which of the two mechanisms corresponding to the theoretical models of ion transfer is actually applicable.

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UDC 621.791.756:669.715

USSR

RABKIN, D. M., ISHCHENKO, A. Ya., SINCHUK, A. G., Institute of Electric Welding imeni Ye. O. Paton and PORTNOY, N. D., KUKLINA, S. S., and BARANOV, A. V., Ural Railroad Car Plant imeni F. E. Dzerzhinskiy

"Electroslag Welding of Large-Cross-Section Pressed Profiles From AMg6 Alloy"

Kiev, Avtomaticheskaya Svarka, No 12, Dec 70, pp 52-54

Abstract: A description is given of the process of electroslag welding of large-dimensioned rings made of AMg6 aluminum alloy. The process was developed by the two institutions of which the authors named above are members, working in collaboration, and has been put into production. The weldings were from plane electrodes made of the AMg6 alloy (GOST standard 4784-65) and SvAMg7 alloy (GOST 7871-63). This method of welding is said to be the most convenient for short seams on large-dimensioned specimens, offering the advantages of high productivity, reduced difficulties in production, reduced expenditures of electrical energy and auxiliary materials, and improved working conditions for employees. A table gives the compositions of the AMg6 and SvAMg7 alloys.

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- 67 -



1/2 031 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--HEAT TRANSFER IN UNIFORM MIXTURE OF TWO DISPERSE MATERIALS -U-

AUTHOR--(03)-GORBIS, Z.R., KNYAZEV, L.P., KUKLINSKIY, V.V.

COUNTRY OF INFO--USSR

SOURCE--INZHENERNO-FIZICHESKIY ZHURNAL, 1970, VOL 18, NR 1, PP 45-51

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HEAT TRANSFER, MATERIAL MIXING

CONTROL MARKING--NO RESTRICTIONS

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STEP NO--UR/0170/70/018/001/0045/0051

CIRC ACCESSION NO--AP0120647

UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120647

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FIG. 1. NU VERSUS D SUB1 (D SUB1, MM): 1. COOLING OF METAL SPHERE IN FILLING OF METAL SPHERES (D SUB2 EQUALS 4.76 MM) IN THE TEMPERATURE RANGE 660-250DEGREESC; 2. THE SAME IN THE RANGE OF TEMPERATURES 250-100DEGREES C; 3. COOLING OF METAL SPHERE IN SEMI COKE FILLING IN THE RANGE FROM 600 TO 250DEGREESC (D SUB2 EQUALS 3 DIVIDED BY 5 MM); 4. COOLING OF METAL SPHERE IN THE TEMPERATURE RANGE 350-100DEGREESC. FIG. 2. SCHEME OF EXPERIMENTAL INSTALLATION: 1. DRYING CABINET; 2. WOODEN BOX; 3. SPHERES; 4. PORCELAIN GRID; 5. SAND; 6. COLD THERMOCOUPLE JUNCTION; 7. GALVANOMETER. FIG. 3. COMPARISON OF PREDICTED AND EXPERIMENTAL DATA (TAU, MIN): 1. CALCULATION BY NUMERICAL METHOD; 2. EXPERIMENTAL DATA; 3. CALCULATION BY METHODS. FIG. 4. COMPARISON OF NUMERICAL SOLUTIONS AND THOSE BY EQUATIONS (9), (10) (TAU MIN): 1. NUMERICAL CALCULATION; 2. BY EQUATIONS (9), (10). SUMMARY. HEAT TRANSFER IN DISPERSE SYSTEM OF IMMOVABLE UNIFORM MIXTURE OF COARSE AND FINE DISPERSE MATERIALS IS CONSIDERED. THE PROBLEM IS SOLVED AT BOUNDARY CONDITIONS OF THE IV KIND. SOLUTIONS OF THE PROBLEM ARE COMPARED WITH EXPERIMENTAL DATA. EXPRESSIONS ARE RECOMMENDED FOR CALCULATION OF THE CHANGE IN TEMPERATURE OF MIXTURE COMPONENTS AND TIME OF THERMAL EQUILIBRIUM ONSET.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--300CY70  
TITLE--ON THE USE OF DECA IN THE TREATMENT OF ULCER DISEASE -U-  
AUTHOR--KUKLYA, YU.I.  
COUNTRY OF INFO--USSR  
SOURCE--VRACHEENOYE DELG, 1970, NR 6, PP 80-83  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--DIGESTIVE SYSTEM DISEASE, CHOLINOLYTIC, PAIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3002/1757

STEP NO--UR/0475/70/000/006/0080/0083

CIRC ACCESSION NO--AP0129125

UNCLASSIFIED

2/2 021  
CIRC ACCESSION NO--AP0129125

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CLINICAL OBSERVATIONS ARE DESCRIBED ON 62 PATIENTS WITH ULCER DISEASE TREATED WITH DOCA (50 PATIENTS) AND DOCA PLUS CHOLINOLYTICS (12 PATIENTS). IT WAS FOUND THAT DOCA IS RATHER VALUABLE IN THE TREATMENT OF ULCER AND POSSESSES GOOD REGENERATIVE PROPERTIES POSITIVELY EFFECTING THE GASTRIC ACID FORMING FUNCTION. BUT SINGLE USE OF DOCA IS OF RESTRICTED VALUE BECAUSE OF ITS SIDE EFFECT AND INADEQUATE EFFECT ON THE PAIN SYNDROME. THE SYMPTOM COMPLEX OF ULCER DISEASE IS BETTER INFLUENCED BY THE COMBINATION OF DOCA WITH CHOLINOLYTICS. FACILITY: GASTROENTEROLOGICHESKAYA LABORATORIYA KAFEDRY FAKUL'TETSKOY TERAPII KIEVSKOGO MEDITSINSKOGO INSTITUTA.

UNCLASSIFIED

1/2 032 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--MECHANISM OF THE WORK HARDENING OF HARDENED STEEL DURING  
DEFORMATION AGING -U-  
AUTHOR-(03)-BABEY, YU.I., MOISEYEV, R.G., KUKLYAK, M.L.  
COUNTRY OF INFO--USSR  
SOURCE--FIZ.-MEKH. MATER. 1970, 6(1), 100-2  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--METAL AGING, ALLOY DESIGNATION, CHROMIUM STEEL, ALLOY  
COMPOSITION, IMPACT STRENGTH, METAL INTERNAL FRICTION, CYCLIC ENDURANCE  
LIMIT, TORSION STRESS, METAL DEFORMATION/(U)40KH CHROMIUM STEEL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAHE--3001/0331 STEP NO--UR/0369/70/006/001/0100/0102  
CIRC ACCESSION NO--AP0126087  
UNCLASSIFIED

2/2 032 UNCLASSIFIED PROCESSING DATE--27NOV79  
CIRC ACCESSION NO--AP0126087  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STEEL 40KH (C 0.35, MN 0.7, SI 0.24, S 0.024, P 0.018, CR 0.90, AND NI 0.14 WT PERCENT) AFTER QUENCHING IN OIL FROM 850DEGREES AND TEMPERING FOR 2 HR AT 180DEGREES, WAS DEFORMED BY TORSION (0-4PERCENT) AT 8-10DEGREES-MIN, HELD IN THE STRESSED STATE FOR 5-7 MIN, AND UNLOADED AT THE SAME RATE. DEFORMED SPECIMENS WERE AGED FOR 2 HR AT 100DEGREES, AND AFTERWARDS THE IMPACT STRENGTH, INTERNAL FRICTION, AND ENDURANCE WERE DETD. THESE PROPERTIES WERE ALL INCREASED WITH DEFORMATION DEGREE UP TO 20DEGREES, AND WITH LARGER DEFORMATION DEGREES THESE PROPERTIES DECREASED, TO INITIAL OR BELOW INITIAL VALUES. TORSIONAL DEFORMATION WITH SUBSEQUENT AGING CAUSED THE FORMATION OF CONSIDERABLE RESIDUAL STRESSES (150-250 KG-MM PRIME2) IN SURFACE LAYERS OF TESTED SPECIMENS, WHICH CONTRIBUTED TO THE INCREASE OF CYCLIC STRENGTH OF DEFORMED AND AGED STEEL.  
FACILITY: FIZ.-MEKH. INST., LVOV, USSR.

UNCLASSIFIED

USSR

UDC 621.789:669.15"24"26

ROMANIV, O. N., DYAKIV, I. R., and KUKLYAK, N. L., Institute of Physics Mechanics, Academy of Sciences, Ukrainian SSR, Kiev

"Influence of Heat and Mechanical Treatment on Rupture Work of Medium-Alloy Steel"

Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, No 2, 1971, pp 24-27

Abstract: Earlier studies have indicated the primary influence of high-temperature heat and mechanical treatment on the brittle strength of machine building steels. This article studies the question of the criteria of the favorable influence of this treatment on the crack propagation resistance of these steels. The studies were performed using chrome-silicon and chrome-nickel steels. A comparative estimate was made of the work of rupture of bar specimens with stress concentrators and with fatigue cracks formed at the mouths of the concentrators under impact loading. The resistance to crack propagation was found to increase only if the temperature at which the tests were performed was below the upper threshold of cold brittleness of the specimens. The optimal degree of compression during high-temperature heat and mechanical treatment depends not only on the chemical composition and treatment mode of the steel, but also on the conditions of subsequent mechanical testing. As the test conditions become more rigid, the influence decreases.

1/1

KUKOL, V.V.

SPKS 09808  
6-73

3

111-70. STUDY OF LATTICE DEFECTS IN SINGLE RING LAYERED CRYSTALS AND THEIR EFFECT ON PHYSICAL PROPERTIES

Article by V. V. Kukol', Ye. Ye. Labin, L. A. Sinyayev, Khaf'kov; Novosibirsk, Ill. *Imitation of Phenomena* Issue 1 (Moscow Polytechnical University, Krasnodar) 1977, No. 1, p. 111.

In the study of A. V. compounds, the zinc sulfide crystals grown from the melt under stress have high concentration of the packing defects which have an effect on the physical properties of the crystals. The process is described in the literature for determining the packing defect concentration in atomic crystals on a diffractometer (with respect to the statistical intensities of rays by sphalerite and wurtzite) does not permit distinguishing of the packing defects and the microstructural layers of wurtzite, and it also fails to permit distinguishing of strained and deformation packing defects. Since the known x-ray diffraction method of solving these problems for polycrystals are not applicable to single crystals, we have developed a method of determining the packing defect concentration in single crystals by means of the scattering intensity distribution curves for the x-rays on an x-ray diffractometer (corresponding to diffraction of the inverse lattice nodes of the crystals).

Results are presented from determining the packing defect concentration in single crystals grown under different conditions and with different additives and also depending on the temperature and time of annealing of the specimens; a comparison is made with other physical characteristics of the crystals.



KUKOLI,

V.V.

3085  
6-73

VIII-9a. PREPARATION OF THE STRUCTURE AND MECHANICAL STRENGTH OF SINGLE CRYSTALS OF THE AL<sub>18</sub>Si TYPE GROWN FROM A MELT AND FROM THE VAPOR PHASE  
Investigated by: A. A. Gerasimov, V. V. Kuznetsov, G. A. Pechenkin, V. I. Kuznetsov, Khar'kov, Novosibirsk, Ill. All-Russian Scientific Center for the Study of the Structure and Properties of Materials, 12-17 June 1972, p. 110

The single crystals and cast crystals of the Al<sub>18</sub>Si alloy have been investigated. The structure of the single crystals of the Al<sub>18</sub>Si alloy has been determined by X-ray diffraction. The single crystals of the Al<sub>18</sub>Si alloy have been grown from a melt and from the vapor phase. The mechanical strength of the single crystals of the Al<sub>18</sub>Si alloy has been investigated. The structure of the single crystals of the Al<sub>18</sub>Si alloy has been determined by X-ray diffraction. The single crystals of the Al<sub>18</sub>Si alloy have been grown from a melt and from the vapor phase. The mechanical strength of the single crystals of the Al<sub>18</sub>Si alloy has been investigated.

The single crystals of the Al<sub>18</sub>Si alloy have been grown from a melt and from the vapor phase. The mechanical strength of the single crystals of the Al<sub>18</sub>Si alloy has been investigated. The structure of the single crystals of the Al<sub>18</sub>Si alloy has been determined by X-ray diffraction. The single crystals of the Al<sub>18</sub>Si alloy have been grown from a melt and from the vapor phase. The mechanical strength of the single crystals of the Al<sub>18</sub>Si alloy has been investigated.

It was demonstrated that alloying single ZnS crystals with donor admixtures (aluminum) stabilizes the wurtzite structure, and alloying with acceptor admixtures (copper) the sphalerite structure. For alloyed single crystals, a study was made of the morphology of the microstructure, and conclusions were drawn regarding the laws of plastic flow caused by the interaction of the microstructure with the external stress.

USSR

UDC 666.764.1.001.4

KUKOLEV, G. V., NEMETS, I. I., DOBROVOL'SKIY, G. B., and NESTERTSOV, A. I., Kharkov Polytechnical Institute imeni V. I. Lenin

"Production and Properties of Dense Magnesia Refractories With Increased Thermal Stability"

Moscow, Ogneupory, No 3, Mar 71, pp 43-48

Abstract: It was found that magnesia refractories can be produced with improved thermomechanical properties using a spinel binder for synthesis instead of technical alumina. Experimental studies revealed the substantial effect of crystallization and spatial distribution of the spinel in the structure of the material on the thermomechanical properties of magnesia parts. From a chemical analysis it was found that at 1070°C in MgO-Al<sub>2</sub>O<sub>3</sub> mixtures the spinel content was less than 1%, while in a mixture of MgO and Al the spinel content was almost 1% at 750°C and increased with temperature, so that at 1070°C the spinel content was 8.5%. This confirmed the fact that in MgO-Al the spinel starts forming at 770°C but in MgO-Al<sub>2</sub>O<sub>3</sub> mixtures the spinel does not form until a temperature of 1000°C is reached.

1/1

Organometallic Compounds

USSR

UDC 541.49:547.1.018:546.92:546.98

KOLOMNIKOV, I. S., KUKOLEV, V. P., CHEBOTAREVA, T. D., and VOL'PIN, M. YE.,  
Institute of Metalorganic Compounds, Acad. of Sc., USSR

"Triphenylphosphine Carboxyl Complexes of Platinum and Palladium"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 4, Apr 73,  
pp 946-947

Abstract: Carboxyl complexes of platinum and palladium with the composition  $(\text{Ph}_3\text{P})_2\text{M}(\text{OOCR})_2$  have been obtained by reacting organic acids with  $(\text{Ph}_3\text{P})_4\text{Pt}$  and  $(\text{Ph}_3\text{P})_4\text{Pd}$  complexes. In contrast to the platinum complexes, the palladium products were highly unstable.

1/1

USSR

UDC: 519.217

YEZHOV, I. I., KUKOLEVSKAYA, L. I.

"On Distribution of the Maximum Length of a Queue in a Single-Channel Queuing System"

Teoriya veroyatnostey i mat. stat. Mezhd. nauch. sb. (Probability Theory and Mathematical Statistics. Interdepartmental Scientific Collection), 1971, vyp. 4, pp 86-94 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V140)

Translation: An explicit expression is derived for distribution of the maximum length of a queue in an M/M/1 queuing system in the case of a non-ordinary flow of demands. V. Prelov.

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USSR

UDC 61:796

KUKOLEVSKIY, G. M., and GRAYEVSKAYA, N. D.

Osnovy Sportivnoy Meditsiny (Fundamentals of Sport Medicine), Moscow, "Meditsina," 1971, 368 pp

Translation: Annotation: The book Osnovy Sportivnoy Meditsiny is a handbook for doctors working in the fields of physical training and sport. The book consists of sections devoted to the questions which are most urgent for the practicing physician concerning organization of the medical-physical training service, the effect of systematically engaging in physical exercises on the organism, methods of medical observation of those exercising, diagnosing physical condition, physical training and sport hygiene, and preventing athletic injuries.

The book is written on the basis of modern scientific data and a generalization of leading experience, and it will supply the necessary knowledge for doctors who observe physical training participants and athletes.

The book devotes special attention to medical investigation of athletes, and determining their health, physical development, functional capacities of the organism, and level of conditioning.

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USSR

KUKOLEVSKIY, G. M. and GRAYEVSKAYA, N. D., Osnovy Sportivnoy Meditsiny (Fundamentals of Sport Medicine), Moscow, "Meditsina," 1971, 368 pp

At the present time, due to the widespread development of physical training and sports and the broad deployment of the medical-physical training service, and the enlisting of the entire network of treatment in preventive institutions of health agencies in medical support for the physical training movement, a great need is felt for handbooks for doctors on special questions of sport medicine.

The last handbook on sport medicine came out in 1961. Since then science has been enriched with important new data and the organization of practical work in the area of medical checkups has improved. All this makes it necessary to publish a new handbook on sport medicine.

The book Osnovy Sportivnoy Meditsiny is designed not only for sport doctors, but also for doctors working in the areas of therapeutic physical training, functional diagnosis, aviation and space medicine, labor hygiene, occupational pathology, and medical-labor certification.

There are 52 tables and 75 bibliographic entries.  
2/9

USSR

KUKOLEVSKIY, G. M. and GRAYEVSKAYA, N. D., Osnovy Sportivnoy Meditsiny (Fundamentals of Sport Medicine), Moscow, "Meditsina," 1971, 368 pp

Foreword

In our country, physical training and sport are assigned enormous importance as one of the factors in the harmonious development of the citizen of the new communist society. The Soviet system of physical education encompasses physical training exercises and sport by the broad masses of the population from birth to old age.

Physical training and sport have become truly widespread and popular. With every year more and more new millions of people of different ages and occupations join in the exercise, which reflects the continuously growing level of the people's cultural and physical standard of living and the constant concern of the Communist Party and Soviet Government for the health of Soviet people.

Individual elements of the unified system of physical education include morning hygienic exercises and conditioning, exercising at the production site, compulsory lessons in physical education at all educational institutions, sport exercises in the sections of voluntary sport societies, tourist hikes, exercises in "health groups" for middle-aged and elderly citizens, therapeutic

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USSR

KUKOLEVSKIY, G. M. and GRAYEVSKAYA, N. D., Osnovy Sportivnoy Meditsiny (Fundamentals of Sport Medicine), Moscow, "Meditsina," 1971, 368 pp

physical training for persons with health problems, and the enormous number of sports contests, spartakiads, and holidays. More than 50 million people in the country have now become involved in organized physical exercise. The army of skilled athletes, whose achievements in the international arena are universally recognized, grows rapidly on the basis of the mass physical training movement.

The history of Soviet physical training and Soviet health services is unfailingly characterized by constant concern for using physical training in sport to strengthen the health of the working people.

The 1966 decree of the CPSU Central Committee and USSR Council of Ministers on the development of physical training and sport in the country places before Soviet health services the task of further improving the organization and quality of medical support to the physical training movement and intensifying the role of medical and biological disciplines in scientifically substantiating the system of physical education for the people and training for leading athletes.

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USSR

KUKOLEVSKIY, G. M. and GRAYEVSKAYA, N. D., Osnovy Sportivnoy Meditsiny (Fundamentals of Sport Medicine), Moscow, "Meditsina," 1971, 368 pp

The world's leading system of medical support for the physical training movement, the system of the specialized medical-physical training service, has been established in our country. However, maintaining medical checks on the many millions who are involved is only possible where the entire network of treatment and preventive institutions of health agencies participate in this work.

Medical study of healthy people engaging in physical training and sport has a particular nature, involving the necessity of establishing not only the very earliest signs of disease and impairments in the functional state of the organism which are not even considered in ordinary medical practice, but also determining the level of a person's functional capacities in order to establish his state of conditioning and consciously control the process of physical education and athletic training. All this requires that the doctor have special knowledge in the area of sport medicine -- a branch of preventive medicine whose primary purpose is to assist in strengthening a person's health and raising the level of his physical development and functional capacities through physical training and sports.

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USSR

KUKOLEVSKIY, G. M. and GRAYEVSKAYA, N. D., Osnovy Sportivnoy Meditsiny (Fundamentals of Sport Medicine), Moscow, "Meditsina," 1971, 368 pp

We have attempted to present the basic divisions of sport medicine in this book.

In recent years, sport medicine has significantly grown and accumulated many scientific data which are of substantial interest not only for doctors who observe persons engaging in physical training and sport, but also for a number of related branches of medical science.

This book does not claim to be a textbook, and a number of questions of sport medicine are not treated in it. We have concentrated our attention on the basic questions which are of greatest theoretical and practical significance for the work of the sport doctor.

The authors will consider their task to be fulfilled if this book helps doctors to a certain degree in their everyday work. We will receive all critical remarks and requests with gratitude.

The first and fifth sections of the book were written by G. M. Kukolevskiy, while the second and fourth parts were written by N. D. Grayevskaya. The  
6/9

USSR

KUKOLEVSKIY, G. M. and GRAYEVSKAYA, N. D., Osnovy Sportivnoy Meditsiny (Fundamentals of Sport Medicine), Moscow, "Meditsina," 1971, 368 pp

third part was written by the authors jointly. Chapters three and four were written by V. S. Dyadicheva and G. M. Kukolevskiy.

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USSR

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USSR

UDC 621.372.5

TOLKALIN, L. N., KUKOL'NITSKIY, A. F., YUR'YEV, YU. N.

"Phase Filter with Corrected Characteristic"

Vopr. radiotekhniki --V sb(Problems of Radio Engineering -- collection of works),  
Tula, Tula Polytechnical Institute, 1970, pp 98-105 (from RZh-Radiotekhnika,  
No 4, Apr 71, Abstract No 4A146)

Translation: The possibility of expanding the phase characteristic band of  
a phase filter is investigated. Methods of practical realization of the fil-  
ter with a corrected characteristic are proposed, and the circuit elements are  
presented.

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USSR

UDC: 620.193.19;621.723

DERENDOVSKIY, A. F., KUKONESKU, V. F., BOLOGA, M. K., Kishinev

"Cavitation and Corrosion Resistance of Metals Protected by Metallized Coatings"

Kishinev, Elektronnaya Obrabotka Materialov, No 2(44), 1972, pp 67-70

Abstract: The paper presents the results of studies of the cavitation and corrosion resistance of cast iron and steel with various thermomodification and electrospark coatings under conditions of ultrasonic cavitation and in noncavitation flows. The standards were specimens of St. 18-36 cast iron and St. 3 steel to which zinc, chromium, and Ti5K6 alloy were applied. Plating conditions are given. Steel with electrospark Ti5K6 alloy coating shows the best resistance to cavitation erosion.

1/1

USSR

UDC 621.311.4

KUKOS, A. F.

"Some Problems of Planning, Design and Construction of Substations"

V sb. Energ. str-vo (Power Engineering Construction -- Collection of Works),  
No 9 (III), Moscow, 1970, pp 45-47 (from RZh-Elektrotekhnika i Energetika,  
No 3, Mar 71, Abstract No 3 Ye84)

Translation: All 35-110 kilovolt transformer substation assemblies must be built by portable motorized mechanized columns simultaneously with the construction of the corresponding sections of the electric power transmission line. In order to build standard prefabricated 35 and 110 kilovolt substations and also 220 kilovolt substations with transformers up to 60 megavolt-amperes without a gib crane, it is necessary that construction sections equipped with machinery and the corresponding personnel be created within the motorized mechanized columns. For erection of large 220-500 kv substations with a field service and technical maintenance building, it is necessary to create special construction organizations. Improvements in the design are also required: it is necessary to introduce foundationless transformer substation assemblies on slab bases, substations using frame construction and also 220 kv transformer substation

1/2



USSR

KUKOS, A. F., Energ. str-vo (Power Engineering Construction -- Collection of Works), No 9 (III), Moscow, 1970, pp 45-47 (from RZh-Elektrotehnika i Energetika, No 3, Mar 71, Abstract No 3Ye84)

assemblies. Remote controlled unattended 35-220 kv substations must be more widely used. This will reduce the volume of residential construction. It is necessary to eliminate the excess in designing large-scale 220-500 kilovolt substations, in particular, to limit the construction of railroad sidings and use economical one-story field service buildings. It is necessary to stop building technical maintenance towers at the 500 kilovolt substations, replacing them by gantries without operational losses. In the future the substations should be built without the gantries, and transformers not requiring inspection should be installed.

2/2

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USSR

UDC 632.95

LOZINSKIY, M. O., PROTOPOPOVA, G. V., DZYUBAN, A. D., REYDALOVA, L. I.,  
KUKOTA, S. N., PEL'KOS, P. S.

"Pesticidal Properties of  $\alpha$ -arylhydrazono- $\beta$ -oxocarboethoxybutyryl- $\lambda$ -  
triphenyl (or trimethylol)-phosphonium Bromides"

Fiziol. aktivn. veshchestva. Resp. mezhved. sb. (Physiologically Active  
Substances. Republic Interdepartmental Collection), 1972, vyp. 4, pp 33-34  
(from RZh-Khimiya, No 2 (II), Feb 73, Abstract No 2N468)

Translation: The synthesis and insecticidal properties of compounds with the  
following formula are described:  $[R_3PCH_2COC(=NNHC_6H_4R')COOC_2H_5]Br(I)$  ( $R = Ph$ ,  
 $CH_2OH$ ;  $R' = H, Cl, alkyl$ ). A solution of 0.02 moles of  $Ph_3P$  in 10 ml of  $C_6H_6$   
is added to a solution of 0.02 moles of  $BrCH_2COC(COOC_2H_5)(=NNHC_6H_4R')$  in 10-  
15 ml of  $C_6H_6$ , it is mixed at  $\sim 20^\circ$  for 10 to 12 hours, the precipitate is  
separated, washed with  $C_6H_6$  and crystallized from the mixture of  $C_6H_6$  and  
acetone to obtain I ( $R'$ , the melting point in  $^\circ C$  are presented)  $R = Ph$ :  
H(Ia), 144;  $\pi$ -Me (Ib), 143;  $\pi$ -OMe (Ic), 146;  $\pi$ -Cl (Id), 157-8;  $\pi$ -COOMe (Ie),  
177-8;  $\pi$ -NO<sub>2</sub>, 135-6; 2-OMe-5-NO<sub>2</sub>, 146. By a reaction in dimethylformamide,  
I ( $R = CH_2OH$ ) is obtained ( $R'$  and the melting point in  $^\circ C$  are presented):  
 $\pi$ -Cl, 141-2; 2-OMe-5-NO<sub>2</sub>, 140. The Ia-e in a concentration of 0.1% have 60  
to 100% activity with respect to greenbug (*Toxoptera graminum*). The I has  
low activity with respect to red spider mites.

USSR

UDC: 547.558.1+547.241

LOZINSKIY, M. O., KUKOTA, S. N., and PEL'KIS, P. S., Institute of Organic Chemistry, Academy of Sciences of the Ukrainian SSR

"Research in the Halogen-Substituted Carboxylic Acid Series. III. Synthesis of Phosphorans Which Contain Arylhydrazone Groups"

Leningrad, Zhurnal Obshchey Khimii, Vol 40 (102), No 11, Nov 70, pp 2893-2896

Abstract: The authors describe synthesis and properties of a number of  $\alpha$ -arylhydrazono- $\beta$ -oxocarboethoxybutyryl- $\gamma$ -triphenyl and trioxymethyl- $\gamma$ -phosphonium bromides. The initial reagents were arylhydrazones of ethyl ether of bromoacetyl glyoxylic acid, triphenylphosphine, and trioxymethylphosphine. The resultant products are fine yellow crystals, partly with a metallic luster, which are readily soluble in lower alcohols and dimethylformamide, and poorly soluble in benzene, ether and acetone. When salts (I-VI) are reacted in an aqueous solution of soda at 40-55°C for 6-8 hours, or with triethylamine in tetrahydrofuran, the corresponding phosphorans are produced in the form of yellow crystals which dissolve in many organic solvents. These phosphorans react with carbonyl compounds in a number of electrophilic agents. Compounds (VIII-X) are spermacides.

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USSR

UDC 621.762.001.

SLEPTSOV, V. M., SHCHEGOLEV, G. M., KUKOTA, YU. P., and PRSHEDROMERSKAYA, YE. M.

"Decreasing the Erosive Wear of Refractory Joints in Plasma Fluxes by Means of Thermochemical Protection"

V sb. Tugoplavk. karbidy (The Refractory Carbides -- Collection of Works), Kiev, "Nauk. Dumka," 1970, pp 231-233 (from RZh-Metallurgiya, No 3, Mar '71, Abstract No 3G372 by authors)

Translation: The article considers the effectiveness of using thermochemical protection to decrease corrosive and erosive wear of refractory joints in high-temperature fluxes. The technology of producing porous materials is described. A device has been created for testing the resistance of materials in plasma fluxes. The authors present profiles of the concentration above the porous channel wall during the injection of carbon dioxide into the air-stream. Two illustrations.

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TITLE—COMPOSITE METALS

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AUTHOR-- KUKOVAL, SKIY, V.

TITLE-- COMPOSITE METALS

NEWSPAPER-- IZVESTIYA, FEBRUARY 15, 1970, P 4, COLS 3-4

ABSTRACT-- THE INSTITUTE OF ELECTRIC WELDING IMENI PATON AND MOSCOW SCIENTISTS HAVE DEVELOPED A TECHNIQUE FOR WELDING ALUMINUM TO STEEL. THE NEW TECHNIQUE HAS BEEN PUT TO USE AT A KIEV PLANT "LENINSKAYA KUZNITSA" IN WELDING ALUMINUM SUPERSTRUCTURES TO STEEL DECKS OF FISHING TRAWLERS.

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KUKOZ, F. I., VOLOSUYUK, YU. M., BONDARENKO, A. V.

"Temporary Changes in a Two-Layer Electrolyzer"

Tr. Novocherkas. politekhn. in-ta (Works of the Novocherkassk Polytechnic Institute), 1971, 239, pp 99-104 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12L288)

Translation: A study was made of the temporary changes in a two-layer electrolyzer to obtain very fine metal powder. The upper layer in the bath is a hydrocarbon solution of surface-active substance, and the lower layer is an aqueous solution of the salt of the desired metal. It is demonstrated that during the contact between the organic and aqueous phases in the two-layer bath changes take place in the electrical characteristics of the bath. With an increase in depth of immersion of the cathode in the lower layer of the two-layer bath, beginning with some depth, the cell resistance does not in practice change and does not depend on the area of the cathode immersed in the lower layer. As polarization studies have shown, the polarization is very high on separation of the metals. The high values of the over-voltage are in accordance with the high resistance of the medium near the growing metal crystals. The variation in the resistance with submersion of the cathode below the interface of the layers is connected with variation of  $1/2$



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KUZOZ, F. I., et al., Tr. Novocherkas. politekhn. in-ta, 1971, 239, pp 99-104

the thickness of the part of the upper layer pulled by the cathode below the level of the interface and with the independence of the number of simultaneously growing crystals with respect to the magnitude of the submerged surface of the cathode. The decrease in overvoltage with contact time of the layers is in accordance with the decrease in the specific resistance of the solution of the upper layer of the bath.

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UDC 621.357.1.035.14

KUKOZ, F. I., VOLOSUYUK, YU. M., BONDARENKO, A. V.

"Mechanism of the Heterogeneous Reaction in a Two-Layer Electrolyzer"

Tr. Novocherkas. politekhn. in-ta (Works of the Novocherkassk Polytechnic Institute), 1971, 239, pp 105-108 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12L289)

Translation: A study was made of the effect of various conditions of electrolysis in a two-layer electrolyzer on the mechanism of the cathode reaction. The upper layer in the bath is a 0.35% solution of oleic acid in toluene, and the lower layer is a solution of  $\text{FeCl}_2$  with a concentration of 30 grams/liter.

A disc cathode was immersed in the upper layer, it was rotated and lowered so that the edge of the disc was approximately 0.5 mm from the interface of the liquids. Under these conditions, two paths of formation and growth of the metal powder are possible: a) nucleation and growth of the particles at the liquid-liquid interface in the upper layer without direct contact of them with the cathode; b) nucleation of the particles and further growth both directly on the cathode and at the liquid interface in the upper layer. Since the growth of the particles directly on the cathode takes place with higher polarization of the cathode and growth of the particles at the liquid interface,  
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KUKOZ, F. I., et al., Tr. Novocherkas. politekhn. in-ta, 1971, 239, pp 105-108

it is possible to assume that the most probable process of formation of the powder in a two-layer electrolyzer is growth of the particles at the liquid interface. The cathode is used to bring the electrons to the reaction zone. The specific nature of its metal and the selective adsorption of the components of the upper layer of the bath probably is a secondary factor.

USSR

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MAKAROV, V. I., MEL'NIKOV, V. A., GALAT, N. I., and KURCOZ, F. I.

"Magnetic Properties of Powders and Their Electrochemical Activity"

Tr. Novocherk. politekhn. in-ta (Works of the Novocherkassk Polytechnical Institute), 1970, 208, pp 100-103 (from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11G296)

Translation: A study is made of the dependence of electrochemical properties (capacity) of electrodes, prepared from iron-nickel active masses (AM), on the imperfections of the crystalline structure of the AM components. The magnetic characteristics of AM (magnetic susceptibility  $\chi_{\partial \varphi \varphi}$ , coercive force  $H_c$  and residual magnetization  $I_R$ ) are used as parameters which determine the degree of structural imperfections. The results of measurements reveal the presence of magnetic-electrochemical characteristics of AM relation. The higher the values of  $\chi_{\partial \varphi \varphi}$  and  $I_R$ , the more imperfect is the crystal lattice of the AM components and the higher the AM quality. The possibility exists of determining the AM quality on the basis of the results of magnetic measurements. V. Kvin

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